

Study of radiation damage induced in Si(111) targets by Antimony ions implantation

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Abstract

In this work, we studied the radiation damage induced by the implantation of Sb^+ ions into Si(111) targets at 120KeV energy to a dose of $1\text{E}15\text{Sb}^+/\text{cm}^2$ and $1.6\text{E}15\text{Sb}^+/\text{cm}^2$. The restoration of defects by the annealing treatments (900°C, 30min) was also investigated. The analysis of samples was performed by Rutherford Backscattering Spectrometry (RBS) using 2MeV He^+ beam using channeling mode. The obtained spectra were analysed by the RBX code in order to extract the desired information: ion implantation parameters, thickness of the damaged layer and defects profiles.

Before annealing treating, the radiation damage increased with the use of antimony dose. By annealing treatment, a satisfactory restoration of damage was obtained approaching the state of virgin samples.

Keywords: *antimony, silicon, ion implantation*